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## CONGESTION IN CITIES

By SIDNEY A. REEVE

Congestion in cities is a phenomenon too obvious to need proof. It is one of the most alarming symptoms of recent social evolution that the people are ceasing to inhabit the country. The resultant deficit in the food supply, on the one hand, and the unwholesome crowding of slums and apartments in the larger cities and factory towns, on the other, are rapidly becoming a real menace to public health and social stability. There are plenty of statistics published as to this. The question is not: Does congestion exist? It is, instead: What are its causes and its cure?

### GROWTH OF AMERICAN CITIES

The national facts as to the growth of cities are these:

TABLE I—GROWTH OF AMERICAN CITIES  
(Communities of 10,000 Inhabitants and Over)

| YEAR      | PER CENT OF<br>POPULATION<br>LIVING<br>IN CITIES | NUMBER OF CITIES |                      |                                      | AVERAGE SIZE<br>OF CITY | NEWARK,<br>N. J. |
|-----------|--|------------------|----------------------|--------------------------------------|-------------------------|------------------|
|           |  | TOTAL<br>NUMBER  | PER CENT<br>INCREASE | NUMBER PER<br>MILLION<br>INHABITANTS |                         |                  |
| 1850..... | 12.2   | 66               | ..                   | 2.85                                 | 42,900                  | 39,000           |
| 1860..... | 15.0   | 86               | 30                   | 2.82                                 | 54,900                  | 72,000           |
| 1870..... | 19.7   | 151              | 75                   | 3.91                                 | 50,300                  | 105,000          |
| 1880..... | 21.5   | 201              | 33                   | 4.01                                 | 53,600                  | 136,000          |
| 1890..... | 28.0   | 340              | 20                   | 5.40                                 | 51,900                  | 182,000          |
| 1900..... | 34.6   | 394              | 16                   | 5.16                                 | 67,000                  | 246,000          |
| 1910..... | 40.1   | 568              | 44                   | 6.18                                 | 65,000                  | 347,000          |

The marked acceleration in rate of city growth between 1860 and 1870 is due not to any direct influence of the Civil War but to its indirect result—the period of commercial prosperity extending from 1864 to 1872 inclusive. Commercialism is the great compacting force.

The apparent drop in rate from 1880 to 1900 is only partly real. During that period the political boundaries of cities, in their expansion, did not keep up with the actual consolidation of population. What are now known as “metropolitan districts” had already begun to form—groups of municipalities, villages, etc., really constituting a single community, but not such by law. The censuses preceding 1900 took no cognizance of this process. Those of 1900 and 1910 give the populations both of the original component political units and of the non-political aggregations, so that by 1910 the artificial distortion of the apparent rate of growth due to this



FIG. 1—Pedestrian traffic congestion at the noon hour on lower Broadway, New York City. (Courtesy of the Committee on the City Plan, Board of Estimate and Apportionment, City of New York.)

cause had been eliminated. In reality, the average rate of increase for the entire sixty years, 36 per cent per decade, was never far departed from in any one decade.

The growth of Newark, N. J., is given as a sample, to show how erroneous must be conclusions as to the growth of congestion as a national phenomenon, if drawn from the observation of the growth of any one city. That is to say, during the last sixty years Newark, New York City, and almost every other single city have grown to a size eight or nine times that of 1850. Yet the *average* size of all cities throughout the land has grown by only about half! But this does not mean that Newark and New York are exceptional cities in their growth, to such a degree that there are enough other cities which have grown so much more slowly that the average is thereby brought down by this marked contrast. The paradox lies in the fact that nearly every other city has grown about as fast as Newark and New York have grown.

The explanation of this paradox is to be found in the vast increase in *number* of cities. All the new cities of course enter the average by crossing the ten-thousand mark from below. The smallest class of cities has grown in number almost as fast as each city has grown in size. This situation may be understood by considering the average age of a family during the child-bearing period. Suppose that the parents marry at twenty and that thereafter they have a child each two years. Then the average age of the entire family, stated each two years until there are four children, will be 20, 15, 13, 12.2, and 12 respectively. Yet during this continuous drop in average age each member of the family is growing older by two-year jumps!

#### CLASSIFICATION OF CITIES

This fact has deceived many into imagining that consolidation of population is proceeding faster than it really is. The truth is revealed by a classification of cities as to size. The United States Census classification recognizes the roughly obvious fact that for any given size of city the number of cities in the land varies inversely as that size. Therefore the range of each class in population should increase as the order of classes proceeds upward in size. Thus the smallest class is stated to range from 10,000 to 25,000, the next from 25,000 to 100,000, the next from 100,000 to 250,000, and so on.

But this plan puts a ratio of lower to upper limit of  $1:2\frac{1}{2}$  in some classes and  $1:4$  in others, which is manifestly unfair. These ratios should be the same for all classes. This is accomplished (when there is one class intermediate between each two having a relative ratio of  $1:10$ ) by using the ratio  $1:\sqrt{10} = 1:3.162$ . In the following tables this principle of classification has been followed. The upper limit of each class is 3.162 times the lower limit.

TABLE II—DISTRIBUTION OF TOTAL POPULATION

| YEAR      | PER CENT OF TOTAL POPULATION             |                                   |                                    |                                     |                                       |   |  |
|-----------|--|-----------------------------------|------------------------------------|-------------------------------------|---------------------------------------|---|--|
|           | COMMUNITIES<br>SMALLER<br>THAN<br>10,000 | CLASS A<br>10,000<br>TO<br>31,620 | CLASS B<br>31,620<br>TO<br>100,000 | CLASS C<br>100,000<br>TO<br>316,200 | CLASS D<br>316,200<br>TO<br>1,000,000 | CLASS E<br>1,000,000<br>TO<br>3,162,000 | CLASS F<br>3,162,000<br>TO<br>10,000,000 |
| 1850..... | 87.8                                     | 3.3                               | 2.3                                | 2.6                                 | 4.0                                   | ....                                    | ....                                     |
| 1860..... | 85.0                                     | 3.1                               | 2.8                                | 3.4                                 | 1.8                                   | 3.7                                     | ....                                     |
| 1870..... | 80.3                                     | 4.7                               | 3.0                                | 5.4                                 | 2.8                                   | 3.8                                     | ....                                     |
| 1880..... | 78.5                                     | 4.7                               | 3.2                                | 5.0                                 | 4.5                                   | 4.1                                     | ....                                     |
| 1890..... | 72.0                                     | 6.6                               | 5.0                                | 4.5                                 | 4.2                                   | 7.7                                     | ....                                     |
| 1900..... | 65.4                                     | 6.2                               | 5.2                                | 5.0                                 | 5.9                                   | 6.2                                     | 6.0                                      |
| 1910..... | 59.9                                     | 7.3                               | 6.0                                | 4.4                                 | 7.8                                   | 7.6                                     | 7.0                                      |

TABLE III—AVERAGE SIZE OF CITY

| YEAR                                     | COMMUNITIES<br>SMALLER<br>THAN 10,000 | CLASS A | CLASS B | CLASS C | CLASS D | CLASS E   | CLASS F   |
|--|---------------------------------------|---------|---------|---------|---------|-----------|-----------|
| 1850.....                                | .....                                 | 15,830  | 44,060  | 147,135 | 481,000 | .....     | .....     |
| 1860.....                                | .....                                 | 15,640  | 55,500  | 184,200 | 580,000 | 1,169,500 | .....     |
| 1870.....                                | .....                                 | 16,000  | 49,300  | 189,000 | 531,000 | 1,461,000 | .....     |
| 1880.....                                | .....                                 | 16,080  | 50,000  | 190,000 | 565,000 | 2,026,000 | .....     |
| 1890.....                                | .....                                 | 15,470  | 52,750  | 190,000 | 444,300 | 1,614,000 | .....     |
| 1900.....                                | .....                                 | 16,800  | 51,600  | 174,500 | 500,100 | 1,570,000 | 4,608,000 |
| 1910.....                                | .....                                 | 16,070  | 53,400  | 155,500 | 513,140 | 1,745,500 | 6,475,000 |
| Average.....                             | .....                                 | 15,980  | 50,940  | 175,760 | 516,400 | 1,598,000 | 5,541,000 |
| Geometric mean be-<br>tween limits.....  | .....                                 | 17,780  | 56,200  | 177,800 | 562,000 | 1,778,000 | 5,620,000 |
| Arithmetic mean be-<br>tween limits..... | .....                                 | 20,810  | 65,810  | 208,100 | 658,100 | 2,081,000 | 6,581,000 |

TABLE IV—RELATIVE DISTRIBUTION BETWEEN CLASSES

| YEAR      | THEORETICAL<br>FIGURE IF<br>POPULATION<br>WERE DIS-<br>TRIBUTED<br>EQUALLY | PER CENT OF THE TOTAL FOR ALL CLASSES REPRESENTED |         |         |         |         |         |
|-----------|--|---|---------|---------|---------|---------|---------|
|           |  | CLASS A   | CLASS B | CLASS C | CLASS D | CLASS E | CLASS F |
| 1850..... | 25   | 27  | 19      | 21      | 33      | ...     | ...     |
| 1860..... | 20   | 21  | 19      | 23      | 12      | 25      | ...     |
| 1870..... | 20   | 24  | 15      | 27      | 14      | 20      | ...     |
| 1880..... | 20   | 22  | 15      | 23      | 21      | 19      | ...     |
| 1890..... | 20   | 24  | 18      | 16      | 15      | 27      | ...     |
| 1900..... | 16.7   | 18  | 15      | 15      | 17      | 18      | 17      |
| 1910..... | 16.7   | 18  | 15      | 11      | 19      | 19      | 18      |

In this system of classification, if the rough rule of inverse proportions were followed exactly by the actual population in distributing itself among the various classes, then the total population would be found to be divided equally among the several classes, irrespective of number or size of class. Table IV shows that this rule holds true in a manner which, even if only approximate, is yet striking. It leaves little room for doubt that this inverse-proportion rule, which is one of fluid equilibrium in inanimate nature, forms the natural law of equilibrium of distribution of population in cities, *when not interfered with by force*.

Parallel evidence in support of this view is found in the lower lines of Table III. The close coincidence of the actual average with the geometric,

rather than the arithmetic, mean between the class limits proves that the inverse-proportion rule is fairly true.

But the above evidence in support of the inverse-proportion rule is based only upon communities larger than ten thousand persons each. Examination of the distribution of the remainder of the population shows a considerable departure from the rule. The presence of some extraneous force perturbing the natural evenness of distribution is beyond question. Thus, comparing the aggregate population in communities less than ten thousand with the largest city in the country, New York, it develops that the former is diminishing, and the aggregate population in cities above ten thousand is increasing, relatively to the inverse-proportion rule. For, according to this rule, the aggregate population up to any given size of community should vary as the logarithm of the given size. But the actuality bears a ratio to this theoretical value which varies as follows:

|      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|
| 1850 | 1860 | 1870 | 1880 | 1890 | 1900 | 1910 |
| 27   | 29   | 36   | 38   | 48   | 57   | 64   |

This growth from 27 to 64 indicates an abnormal growth in urban population at a rate 2.37 times the "normal."

Or, if one prefers the theory that the average size of city, like the average age of a community, should remain constant, in spite of the continuous growth of each individual city, then the actual growth of our cities, as observed from the sixth column of Table I, has been 1.51 times the "normal" rate.

It is some such figures as these, and not the eight- or nine-fold visible in the growth of almost any single city, which indicate the true rate at which the natural distribution of population between small and large communities has been abnormally disturbed toward congestion by some extraneous or unwholesome force.

#### CAUSE OF CONGESTION

It is impossible to treat this topic within the limits of a magazine article, yet there is ample room for *stating* the cause. The proof of the statement would demand a treatise. The reader must accept some things here on faith.

A century or so ago industry was conducted on what is known as the "cottage system," in which each workman worked by himself, used small, simple, cheap tools, and *owned* everything connected with his trade—tools, raw material, and finished product. He must not only make, but also buy and sell, skillfully, else he got no "wages." But means of transportation were then most crude, and the population accessible was confined usually to the workman's own village. So he got along, in spite of the handicap which the inefficient plan of doing everything himself entailed.

But invention along two distinct lines of progress has completely changed all this. The first line of invention was *factory tools and prime*

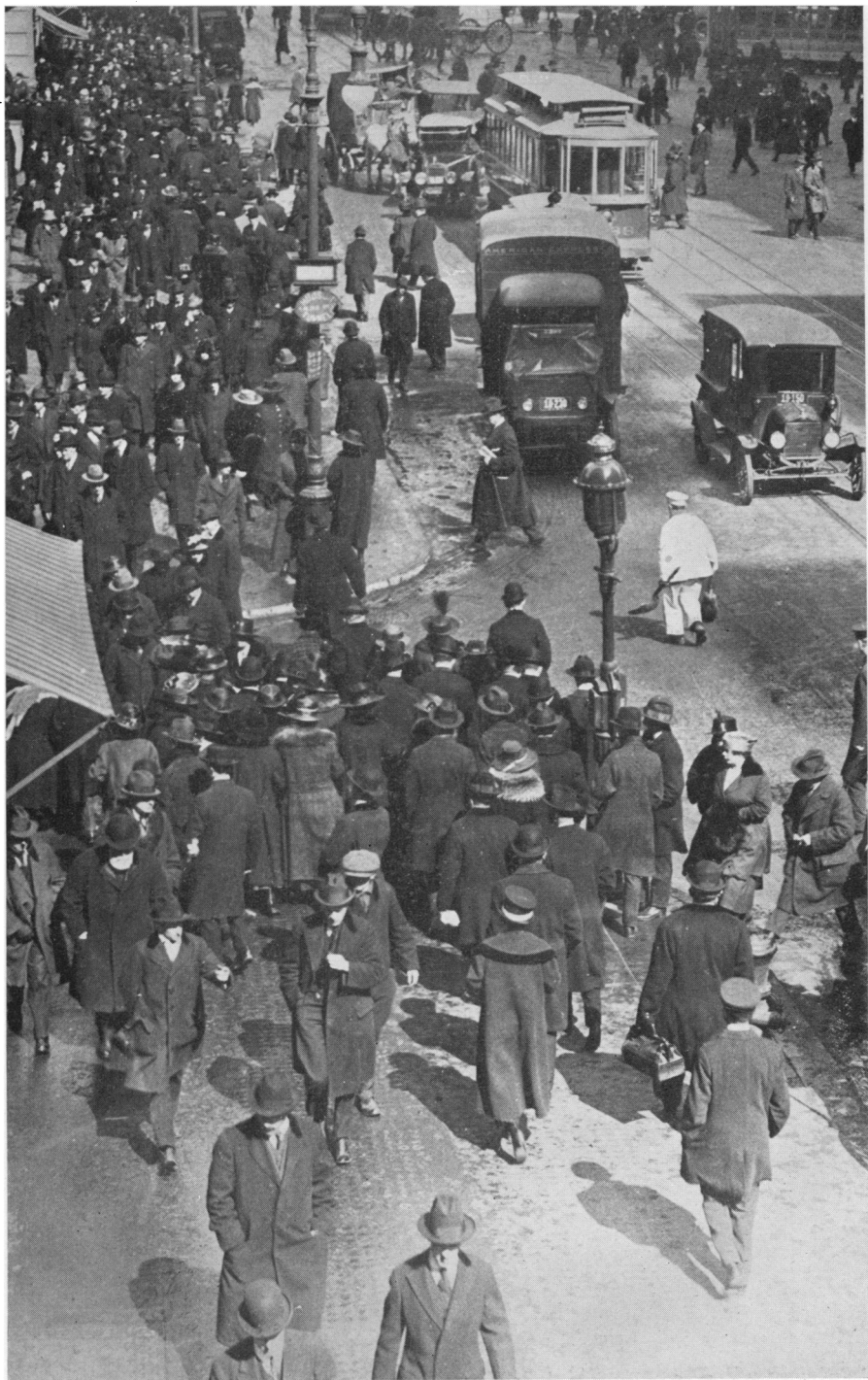


FIG. 2—Pedestrian traffic congestion at the noon hour on lower Broadway at Fulton Street, New York City. (Photo taken for this article; copyright, 1917, by Underwood & Underwood, New York.)

*movers*. This transformed the cottage shop into the huge factories of today. It has multiplied the ease and rate of production of material wealth beyond human comprehension. In many instances it is not too much to say that a given commodity now costs in labor only a fiftieth or a hundredth of what it did a century ago.

But this progress in efficiency has been accomplished only by the rigid exclusion from the factory of all ownership of either tools, raw material, or finished product by the workman; and therefore by eliminating all buying and selling. Every factory owner is agreed upon this policy. If any reader is inclined to doubt the fact that the wonderful productivity of the modern factory is due primarily to this elimination of internal ownership, rather than to modern tools and motors, let him imagine the most modern of factory plants presenting itself to its superintendent, some fine morning, as having miraculously experienced "ownership" during the preceding night. Imagine his finding that it was now universally accepted law that no tool could be used unless some workman might be found able to own it and that no other workman than its owner might use the tool. Imagine the number of modern tools which would be conspicuous by their absence or their idleness under this plan! Imagine what would happen every time a workman chanced to be absent for illness or what not—how all the half-finished work preceding his particular process must pile up until its owners could no longer afford to accumulate it, because he was not there to buy it off their hands; and how all workmen following this particular one must fall idle because their supply of raw material had ceased. Imagine then the task of negotiating separately the price of each transfer of each bit of half-finished work at each step in its progress through the shop, at prices varying constantly as one or another saw opportunity for profit by pushing or holding back exchange. Imagine the difficulty of determining by dicker the person to undertake the next step in manufacture; for there could be no definite assignment of route of work from man to man. Ownership means license to do as one pleases with the thing owned and to trade it wherever the best profit can be found; and freedom to own always means duplication or multiplication of people attempting to effect the same supply or demand.

Imagine also each boiler room "owned" by some nervy fighter for bargains, its furnaces fired by half-hearted second-rate firemen, while every workman must pay tribute for steam to this owner. And imagine each engine room privately owned, with several in competition for supplying power to the same factory and all power denied except to him who will pay tribute—not to reimburse the engine runner for his labor nor to make good depreciation, but to pay the owner a tax for his ownership above all these expenses. And imagine each tool room and pattern room and stock room similarly owned and operated for the profit of the owner rather than controlled, as now, by a wage-paid non-owner for the good of the



entire factory. And then imagine every one of these features existing in multiple within each factory, each workman having to journey from one to the other, seeking the best possible bargain, for each tool, pattern, jig, casting, paint pot, or supply of whatever sort. What would any man of affairs say would be the efficiency of such a factory, however modern its equipment, as compared with the modern actuality, which forbids all private ownership? Would it be as much as five per cent? It certainly could not be ten per cent.

For every employer of factory labor has always, without denying the general right of private property, forbidden absolutely the bringing of the institution of private ownership into the factory. Ownership and ownership-in-industry are two widely different things. Yet, from the point of view of the ultimate consumer, who employs all industry and pays all of its various costs, the present plan of having each factory and shipment of goods privately and independently owned appears exactly as needless and inefficient a way, relatively to the organization of all industry on the plan universally approved by all employers of labor, as would this imaginary factory permeated with ownership appear to its astonished and disgusted superintendent. And if the consumer-world were at all business-like it would take it about as long to start to organize industry on the national factory plan as it would this imaginary superintendent to call in the police and sweep the entire anarchy of cross purposes and antagonism into the street.

For the modern factory, it seems necessary to remind all classes of readers, is a locality of the most active *exchange*—much more so than is any market; but there is no buying or selling, because no ownership. In every factory the entire arrangement is designed by the most skillful engineers to facilitate this constant and intricate exchange; yet the fiscal side of the process is conducted, quite unconsciously on the part of the workmen, through a central office force of cheap clerks in an exceedingly simple manner. There is no reason why this same process should not be even more effective if adopted on a national scale. And it would constitute an enormous gain in efficiency.

For invention along the second line, *transportation and communication*, has developed the primitive function of exchange-by-ownership (of the cottage system) into what is now known as the modern market system, in contradiction to the factory. Transportation and communication have very much widened the population accessible to a given point of production. The consumer of a given article must now be identified among a world population of hundreds of millions, as contrasted with the few hundred fellow villagers of the pristine cottage workman.

This task is accomplished in the market system by an endless intricacy of buying and selling. While some exchange occurs, there is far more energy devoted to buying and selling than to actual exchange. Aided by

the invention of the steamship, railroad, telegraph, and telephone, this market system has grown into a vastly complex and hugely profitable organization—or field of battle, or Donnybrook Fair, rather, where every man fights as he pleases. The money procurable in this way by a given amount of exertion far exceeds that attainable by production. “The money is not made in the factory, but in the New York office,” said one successful manufacturer. The same is true of the farm. The money goes to him who sells farm produce rather than to him who raises it. While apples rot in the orchards because it does not pay to barrel them and cart them to the station, there is plenty of money being made in selling apples in the city. Salesmen, brokers, speculators, and financiers turn up profits at a rate undreamed in industry.

All this frantic buying and selling in order to secure profits—for it has no connection with desire for consumption of the things bought and reduces consumption by adding its fancy and rising costs of selling to the sober, necessary costs of production and transportation—can be lumped under the blanket term *negotiation*, or, more broadly still, *commercialism*. The great and growing occupation of the day, in spite of our marvelous production of commodities, is not production but commercialism. No institution, no faith, no practice, no economic function in the world’s history, has ever absorbed human energy on such a scale as commercialism is now doing. Feudalism and chivalry, or the medieval religion which built the cathedrals, were but “pikers” in comparison with it, as their castles overlooking the Rhine are but card houses to the skyscrapers towering above Broadway.

Ten years ago the writer published an analysis of the United States census reports from 1850 to 1900 inclusive, which showed that commercialism has been growing upon us at a continuous, but accelerating, rate for at least sixty years.<sup>1</sup> He has now all but completed a more careful revision of this entire task, including the statistics of 1910 and since, done afresh from the start. The later analysis broadly confirms and emphasizes the conclusions of the earlier. It proves that there is nothing in modern civilization—not factory production, nor invention, nor education, nor art, nor religion, nor philanthropy, nor government, nor even war, nor all of these together—which now absorbs so much American energy or is growing so rapidly in energy, prestige, power, and brilliance as is commercialism.

Now commercialism enforces congestion. It is the extraneous force which is diverting population away from its natural distribution in free equilibrium. Briefly, it does this through the following influences:

- (1) *Taxing production*, by assigning to the seller in the city the money which should go to the producer in the country—people follow money.
- (2) *Negotiation* between seller and seller, demanding propinquity. Men

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<sup>1</sup> The Cost of Competition, McClure, Phillips & Co., New York, 1906.



FIG. 3.



FIG. 4.

FIG. 3—Trucking on South Street along the East River front, New York City.

FIG. 4—Push-cart congestion, Rivington Street near Orchard Street, New York City. (Both photos courtesy of the Committee on the City Plan.)

cannot negotiate over the price of everything that moves unless they get in touch with one another. Every source of production must have a selling-office in New York City, with branches in the smaller cities, else it cannot produce. And commercialism is constantly multiplying the number of such sales which must be negotiated for each article passing from producer to consumer. For instance, a recent writer in this *Review*<sup>2</sup> speaks of lower Manhattan as being congested by the lateral pressure of the two limiting rivers; but is this true? The skyscraper district shows no sign of pressure against these lateral bounds. Virtually it does not touch the rivers. The reason for the congestion of skyscrapers is other than topographical. Skyscrapers exist solely in order to bring negotiators into close touch with one another. This itself enforces lateral constriction. No skyscraper far from Broadway yields good office-rents. In other cities, where there are no narrow topographical limits, the skyscraper districts are also narrow; and even if not so much so as in New York it must be remembered that no other city is so intensely commercial in spirit and practice as New York.

(3) *Luxury* crowds into the cities in order to spend, in close propinquity with other birds of the same feather, the unearned, or at least the exaggerated, incomes acquired through commercialism.

(4) *Factories* of a certain sort—those employing largely unskilled labor, or those catering to commercialism, luxury, or display, or those selling in a market which fluctuates widely with season or fashion—enter the cities in order to find floating labor which can be readily discharged or re-employed.

(5) *Warehouses* handling goods subject to repeated speculative sale are located in the city in order to be near the negotiators who dicker over these particular goods; and also in order that the frequent changes of ownership in their commodities can be easily paralleled by transshipment from warehouse to warehouse. But frequent as are these unnecessary costly handlings of goods from warehouse to warehouse by truck over cobblestones, they are neither so frequent nor so unnecessary nor so costly as are the changes in their ownership within the market system.

(6) *Labor* crowds into the cities either to abandon "labor" by turning to commercialism or else, if remaining labor, to get continuity of employment. The chances against unemployment are best where the greatest number of employers are accessible.

(7) *Attendance and supply* must follow the others, in order to feed them.

(8) *Rents*, due to the private ownership of sites, enforce congestion by their tendency to rise to the maximum which "the traffic will bear," and far beyond natural rents. But progress in this direction is impossible except as it stands to give expression or effect to the processes listed above.

<sup>2</sup> Ellsworth Huntington: *The Water Barriers of New York City*, *Geogr. Rev.*, Vol. 2, 1916, pp. 169-183.



FIG. 5—Sidewalks encumbered with fruit cases in a local wholesale fruit district (Attorney Street near Houston Street), New York City. (Courtesy of the Committee on the City Plan.)

Once abolish commercialism, and the natural tastes of the people will scatter them to the country, and rents will drop automatically.

Thus the forces producing congestion are all basic and irresistible, when once that commercialism which every employer excludes rigidly from the premises under his control is admitted into the national industrial system. Congestion is not due to whim. Population gravitates whither it can make the best, the easiest, and the most certain living. The fact that all over the world, under every form of government or diversity of climate, if only commercialism has penetrated there, people are flocking from the country to the city should prove that it is not a matter of whim. Reliance upon persuasion to get the people "back to the land" is exactly as superstitious and impotent a policy as is reliance upon religious processions or carrying a rabbit's foot in the left back-pocket as a preventive of epidemics.

#### RELIEF BY RAPID TRANSIT

The startling fact about congestion is that reliance, for example, upon rapid-transit facilities to relieve congestion is just as superstitious as reliance upon persuasion. If there were a fixed volume of population in the city, of course increased facilities for circulation would relieve crowding. But there is no limit to city populations except the ability to get about profitably. These great forces of commercialism are packing people into the cities just as densely as life can exist there. Any extension of transit facilities *permits additional congestion*. Instead of relieving it, it makes it worse! The whole history of rapid transit and congestion corroborates this fact. New York City is housing some five hundred new inhabitants each night because, on the average, her transit facilities are expanding at a rate to care for this rate of growth in congestion. Her existing subway, with express trains 700 feet long running every two minutes and locals 500 feet long every three minutes, is the most intense passenger-carrier in the world's history. Yet the existing subway system is but a bagatelle compared with that now under construction. What will be the degree of congestion as the result of its operation can be only conjectured!

On May 26, 1907, the *New York Herald* published a symposium of views on this matter by Mr. Theodore P. Shonts, President of the Interborough and other transit companies; Mr. George S. Rice, Chief Engineer of the Rapid Transit Commission; and the writer. In the writer's contribution was included an abstract of the history of New York's rapid-transit problem, a history which should be considered in connection with every discussion of congestion and its remedies. From it the following is quoted:

During the sixties the pressure for something better [than the street-car] became more urgent; but . . . it was not until 1869 that the first elevated construction was undertaken. The first effort was limited to a half-mile of experimental track put up on Greenwich Street; but its apparent success led to its further growth into a genuine road,

extending from Battery Place to Thirtieth Street, the embryo of the present Ninth Avenue line. But the motive power was by cable, from stationary engines, and was mechanically a failure. By 1871 it had been virtually abandoned as a promise of relief.

The state of public opinion existing at this time is shown by the following editorial remarks appearing in the *Railroad Gazette* for February 17, 1872:

"That the city of New York is sorely in need of greater facilities for transporting its people to and fro is a fact which is painfully impressed upon all . . . . Every person who discusses the question is fully satisfied that something must be done."

This editorial might have been written just as opportunely in 1892 or 1902 as in 1872. It expresses almost exactly the situation in New York city today, although the transit-facilities now extend almost to millions where thirty-five years ago they compassed thousands. [And, it might be added now, this editorial is just as timely in 1917 as in 1907.]

During 1872 the old elevated property was purchased by a new organization and was equipped with locomotives, constituting the first really successful elevated rapid transit. The traffic of this road during the succeeding five years, within which time the line was extended to Sixty-first Street, increased as follows:

| <i>Year</i> | <i>Passengers</i> | <i>Increase<br/>(per cent per annum)</i> |
|-------------|-------------------|--|
| 1873        | 640,000           | ...                                      |
| 1874        | 810,000           | 27                                       |
| 1875        | 910,000           | 12                                       |
| 1876        | 2,020,000         | 122                                      |
| 1877        | 3,150,000         | 56                                       |

These figures show how naturally it should come to pass that the situation by 1877 had again become badly congested. In May of that year the same editorials say:

"The [elevated] road has now all the traffic it can accommodate, or rather a little more. Many have to stand in the cars morning and evening, and no more trains can be put on."

On November 16, 1877, the *Railroad Gazette* remarks:

"Where so recently there was no means of traveling from Wall Street to Central Park faster than horses could travel there seem likely to be in a few months three steam railroads, all within a belt a mile wide. The question then will no longer be how people can get up and down in the city, but how the three railroads can get traffic enough to support them."

Oh, halcyon dream! Within less than seven months from that date the Sixth Avenue line was opened, and this is the result of the first day's "relief" of congestion, as commented on in the same columns:

"Most notable of all, perhaps, was the amount of traffic, the trains appearing to be generally filled at some point of their run, and that not only in the morning and evening, but also in the middle of the day. Indeed, about noon many were standing in the cars."

After a review of the growth of elevated traffic from 5,500,000 passengers per annum in 1878 to 130,000,000 nine years later, in statistics which need not be repeated, the article continues:

Already in 1881 trains were running during rush-hours under a headway of 82 seconds over a single track, and almost all of the additional facilities provided during succeeding years were in the form of longer trains. Referring to this lengthening of the train, in October, 1885, the *Gazette* remarks:

"A large number of passengers who now have to stand up for a considerable distance will then be able to obtain the seat for which they have paid."

Oh, halcyon dream again! For in October, 1887, only two years later, the same sheet feels forced to remark:

“The chronic overcrowding of the elevated railroads of New York has lately called forth some indignant protests from the daily press.”

That was the situation twenty years ago. That is virtually the situation today, except that it has become steadily worse. During these twenty years transit facilities have increased by several fold—certainly by over ten per cent per annum—although the population has increased by only . . . about four per cent per annum. During the twenty years the congestion has decreased not one iota. Instead, it has increased. . . .

In the light of history, what is the use of expecting relief from expanded facilities . . . .

The universal reliance upon negotiative effort as the only determinator of price, filling the cities with hordes of negotiators and their aides; upon the conduct of all service for dividends rather than for the sake of the service, and upon private ownership in land—it is the public faith that all these are sacred institutions . . . which alone fastens congestion upon modern civilized existence with the bonds of fate. So long as we continue in this faith we shall suffer increasingly from congestion, and no amount of transit facilities may aid us.

To this situation Mr. Shonts contributes the view, after an abstract of the statistical history of traffic, that

It would therefore appear that the solution of this problem must lie in the creation of additional rapid-transit lines of travel.

And Chief Engineer Rice says, still more unequivocally:

The rapid-transit problem in New York can be solved. There is nothing in the situation to justify the prophecy that New York must always suffer, or long continue to suffer, inconvenience in its traffic-facilities.

But he adds later a paragraph which the editor of the *Herald* italicized in entirety, as follows:

It is one of the paradoxes of our work that as we increase the facilities of transportation we add to its volume in a surprising ratio. In a sense we are therefore working in a circle. As quickly as it becomes possible to ride about the city at an increased rate of speed, and with the opening up of new lines of transit, business increases, population is attracted to the city, and the problem is vastly complicated.

The above quotations show the state of authoritative opinion in 1907; but on July 30, 1916, after nine years of additional experience, the *New York Times* quotes, as from an official utterance of the Interborough Rapid Transit Company, with its own headlines, the following:

New York's Crowds Swamp All Transit  
Interborough Says No Growth of Facilities Can Keep Pace With City's Demands  
No Relief in Third Tracks  
Elevated Traffic Back to Maximum Within a Month, While Subway Jam  
Increases Steadily

No matter how fast rapid-transit lines are built in New York City, the transportation needs of the population always seem to keep ahead of them. . . .

The point here to the student of congestion lies in the fact that in the face of steadily increasing congestion not one of the authorities entrusted with the task of relieving it grasps the real problem at all. Reference is



had here not merely to those connected with actual transit problems, but also to the authorities on political economy and the universities. While the urgency of the moment is of course to extend facilities as best we may, why is it not at all times preached and advertised by all these people that increase in facilities is no remedy? The fact which was obvious in 1876 has not yet been learned. We are being led by every teacher to pile up more and more intense degrees of congestion, by building further transit facilities, until obviously catastrophe must ensue, without one word of warning that it is impending.

What has been said above, while directed primarily to the one phase of the causes of congestion which is most amenable to statistical measure of progress—urban transit—applies also to every other phase of modern commercialism. It is mechanical invention which crowds our cities and cannot lead people away from them so long as commercialism negatives the natural inducement for them to seek the country. To cabbages we grant the boon of space, air, and sunlight enough for their natural development, but not to people. It is not merely the very poor who suffer, but the well-to-do. Every novel invention, in almost any art, facilitates commercialism and thus enforces greater congestion.

The problem of congestion in cities thus far surpasses merely that of poor light and air in the slums or the peril of tuberculosis spread thereby across the avenues. It is one of fundamental social stability. If this situation has become steadily worse during two generations, and if every application of engineering science to it only makes it worse, wherein lies possible hope of gradual remedy? None such is being discussed. None has even been suggested. Even the need for one has not yet penetrated the brains of the self-appointed leaders of public opinion on social problems.